

CLEMSON Impacts

Protecting
South Carolina's
Watersheds

CLEMSON UNIVERSITY PUBLIC SERVICE ACTIVITIES - FALL 2008



Turf Research
Spices Do More
4-H2O Pontoon Classroom
Pee Dee Scholars

Vice President's Message



With interest continuing to grow in alternative fuels, South Carolina growers may have an opportunity to produce new cash crops as feedstocks for biofuel refineries. The 2008 S.C. Bio-Energy Summit noted a variety of crops that are suitable for fuel, including switchgrass and soybeans in addition to corn.

A coalition of education and business groups, called FastTrac, is helping entrepreneurs create, manage and grow successful businesses. With help from Clemson's Institute for Economic and Community Development, one Newberry company won the S.C. Rural Small Business Award for its positive influence on the area's economy and community.

In a Lowcountry forest, biosystems engineers are studying the movement of water through streams and wetlands. By understanding how the natural systems function they can offer recommendations to prevent flooding if the area is developed in the future.

Bitter melon, a plant used from China to Brazil, may offer an alternative to drugs for treating diseases such as diabetes, cancer, ulcer, hepatitis and measles. At least 22 medicinally active chemicals have been identified in the plant and research is underway to identify the medicinal compounds and growing guidelines for South Carolina farmers.

Through a partnership between the S.C. Department of Education and the Youth Learning Institute, tenth-grade students and their faculty mentors are building a culture of servant leadership. The goal is for these skills to benefit their schools and communities, and prepare the students to become productive citizens.

Sincerely,

John W. Kelly
Vice President for Public Service and Agriculture

Knowledge for living.
Knowledge for life.

Front cover photo by Dan Hitchcock

CLEMSON
PUBLIC SERVICE

Clemson Impacts, a quarterly publication of Clemson Public Service Activities, is available to South Carolina residents upon request. *Clemson Impacts* is also available on the web www.clemson.edu/public/

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Temperature research helps floriculture industry thrive

By Peter Kent

Timing is everything in the ornamental horticulture industry. Plants need to arrive healthy and ready to go, either for sale to consumers or for planting by commercial nurseries. Clemson floriculture physiologist Jim Faust works in both areas to help growers keep plants at their peak.

An internationally recognized expert, Faust recently published research that will help poinsettia growers determine how cool they can keep their greenhouses so that the plants look their best during the winter holidays. Research that helps them slow down or speed up plant development can ensure

top quality poinsettias when people want them and can save fuel costs.

Faust is also working with packaging scientist Scott Whiteside to develop a package so young starter plants can be shipped by boat from Central America to U.S. growers. Currently, cuttings are flown in, which is expensive.

Their research seeks to configure ice packs in insulated cartons to protect the tender plants for the longer trip by boat and significantly reduce shipping costs.

For more information: Jim Faust, 864-656-4966, jfaust@clemson.edu.



Photo by John Wells



Photo by Peter Hull

Turf research keeps golf course green – and saves some green

By Peter Hull

Turfgrass expert Dara Park has saved a Myrtle Beach golf course thousands of dollars a year in labor costs and tens of thousands of gallons in wasted water.

In early spring, maintenance staff at Burning Ridge Golf Club noticed large leopard print-like patches appearing on the course's greens. When weeks of laborious hand-watering didn't help, they turned to Clemson.

Park, a horticulturalist at the Pee Dee Research and Education Center, was shown photographs of the affected areas and immediately recognized that the turf was hydrophobic, which means the soil was repelling water.

The condition creates green and brown areas of the turf – green where water gets in, brown where it doesn't. Affected areas can be separated by only a few inches, which create the leopard pattern.

"No one wants to play on brown grass," Park said. She prescribed a series of chemical treatments that returned the turf to full health.

For more information: Dara Park, 843-662-3526, ext. 206; darap@clemson.edu.

Agrisystems Productivity & Profitability

Software saves farmers time in the field

By Peter Hull

Two Clemson scientists have developed software for use with crop-spraying machinery that could save farmers valuable time in the field and fuel in the tractor.

Thanks to software developed by agricultural engineer Ahmad Khalilian and agriculture and biosystems engineer Young Jo Han, researchers at Clemson's Edisto Research and Education Center in Blackville now use a revolutionary multi-boom crop sprayer to deliver 12 treatments in one pass-through.

The machinery is pulled by a tractor that is guided by satellite positioning technology. But what really sets the system apart, said entomologist Jay Chapin, is the ability of the apparatus to turn itself on and off and apply multiple treatments.

Chapin uses the system for pesticides and other chemical treatments. It means that a procedure that used to take six hours to deliver 24 treatments now takes just 30 minutes.

For more information: Jay Chapin, 803-284-3343 ext. 226 or jchapin@clemson.edu.

Clemson Impacts • Fall 2008



Photo by Peter Hull

Switchgrass: the *alternative* alternative fuel

By Peter Hull

As the search for alternatives to oil heats up, Clemson agronomist Jim Frederick says the future of biofuels will likely be a combined effort of numerous crops.

Frederick, who studies the science and technology of utilizing plants for food and fuel, among other applications, told more than 200 visitors to the Pee Dee Research and Education Center Fall Field Day that in addition to corn and soybeans, switchgrass has an important role to play.

Switchgrass is a native perennial plant and is one of the most drought-tolerant warm-season grasses. The plant also is high in cellulose and hemicellulose, and relatively low in lignin – which makes for good conversion to ethanol.

Through his research, Frederick plans to develop a profitable switchgrass production system, genetic improvements using biotechnology and traditional breeding, and a projection for profitability of the crop.

For more information: Jim Frederick, 843-662-3526, ext. 228; jfrdrck@clermson.edu or <http://agroecology.clemson.edu/switchgrass/sg.htm>.



Photo by Peter Hull

Certified Crop Advisors training consolidated

By Peter Kent

Certified Crop Advisors are a vital resource for South Carolina's farmers, providing information and advice on crop production, soil nutrients, pest management and soil and water relationships.

To maintain their certification, they must complete 20 hours of intensive training per year. In the past, these trainings had been held throughout the year in various locations across the state. This year Clemson Extension agents Russell Duncan and Charles Davis offered all of the required training at one time through a three-day certification program.

The training was held this fall in Santee and reached nearly half of the 78 Certified Crop Advisors in the state. The professional advisors found the training to be very effective, more convenient, and more cost-effective than the previous method, particularly with the high price of gasoline.

For more information: Russell Duncan, 803-460-7260, rdncn@clermson.edu.



Photo by Russell Duncan



Plant breeders introduce new soybean varieties

By Peter Kent

Photo by Tom Lollis

Insects, plant diseases, drought and heat all threaten crop yields for farmers. To address these challenges, Clemson plant scientists constantly seek to develop new crop varieties that are hardy and produce high yields.

This year, plant breeder Emerson Shipe and his colleagues introduced three new soybean varieties they have developed. Soybeans are used in foods for humans and animals, as cooking oil and as biofuel. They are an \$80 million crop in South Carolina and are grown on more acres than any other row crop in the state.

The new varieties have good yield potential, improved resistance to nematodes and diseases, and tolerance to glyphosate herbicide. One variety has already been licensed for commercial sale by AgSouth Genetics while another is being evaluated for licensing.

For more information: Emerson Shipe, 864-656-3524, eshipe@clermson.edu.



Photo by Debbie Dalhouse

Pee Dee Scholars study economic development

By Debbie Dalhouse

The Pee Dee Regional Scholars program has brought five sophomore students together as an interdisciplinary creative inquiry team to learn about economic development in the nine-county region.

Working with Bruce Ransom, a policy studies scientist in Clemson's Thurmond Institute for Government and Public Affairs, the students are analyzing issues related to economic and community development in the region, such as the environment, land use and controlled growth, wetlands, tourism, education and health care.

Funded by the Myrtle Beach Endowment, the two-year program assists students from the area with scholarships and paid summer internships in Clemson Extension offices or in nonprofit organizations in the Pee Dee-Grand Strand region.

For more information: Kathy Woodard, 84-656-0205, ckathy@clemson.edu, or www.clemson.edu/servicealliance/.

Strong Communities improves child welfare

By Sharon Crout

Research shows that the Strong Communities initiative of the Institute on Family and Neighborhood Life is helping to protect children in participating Upstate communities.

The program serves southern Greenville and northern Anderson counties. In 2007 surveys, parents of young children in those areas reported better care for their children than did parents interviewed in 2004. However, the opposite was true for parents surveyed in other South Carolina communities.

Parents in the service area described more positive behavior toward their children such as hugs and expressions of affection, more careful supervision, and more use of household safety devices such as baby gates at staircases.

"These results show that Strong Communities is unifying communities to support young families," said Gary Melton, Institute director. "The findings are especially significant since the trend toward isolation and alienation tends to be especially true for young parents."

The Strong Communities initiative began in 2002 through a grant from The Duke Endowment.

For more information: Strong Communities, www.clemson.edu/strongcommunities.



Photo by IFNL

Center aids rural workforce development

By Peter Kent

Good information about what employers need and how area residents match those needs is vital to planning workforce development programs.

To help improve the state's economic development prospects, the University Center for Economic Development provides planning and analytical services to businesses, local and state governments and community organizations.

Recently the center completed a study for the counties in the Upper Savannah Region. Analysts identified industries and occupations in which future employment growth is likely, assessed skills needed for growth occupations, compared skill needs with area skill levels and made recommendations to career and technology education program leaders to match programs with industry needs over the next decade.

The study revealed that rural area planners must seek ways to attract professional and highly skilled jobs that are more likely to be found in metropolitan areas. This means increasing education levels and the quality of life to attract and retain well-educated workers.

For more information: David Barkley, 864-656-5797, dbarkly@clemson.edu.

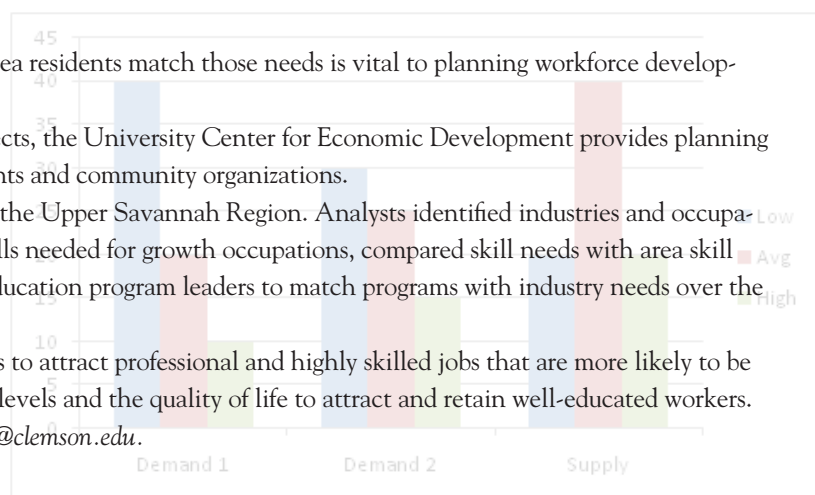




Photo by Julia Kerrigan

Fungi and insect combination is damaging beech trees

By Peter Kent

An interaction between an insect and a fungus is killing American beech trees from Canada to North Carolina. Called beech bark disease, the condition is moving down the east coast. It occurs if the tree is infested with the beech scale insect and then is colonized by a fungus.

Mycologist Julia Kerrigan is investigating the ecology of fungi in forest ecosystems and the fungal diseases of woody plants. Her research examines the relationship between the insect and the fungi, and may point scientists toward control measures to protect the trees.

About 90% of the higher plants, including trees, grasses, flowering and seed-bearing plants, have a mutually beneficial relationship with fungi. Some fungi serve as nutrient recyclers by breaking down dead plant tissues, while others are harmful to plants or animals. Fungi also can be important foods for small mammals and insects, as well as for humans in the form of mushrooms.

For more information: Julia Kerrigan, 864-656-2640, jkerrig@clemson.edu.

Needle ants pose health and environmental threat

By Peter Kent

Ouch! That ant sting may not be from the usual suspects, fire ants. The Asian needle ant, named for its painful sting, is making itself felt in South Carolina.

More than just irritation, the needle ant is considered a public health concern because some victims have had extreme, even near-fatal reactions to the sting. The ant also is an environmental menace. Its colonies tend to drive out all other ant species, many of which are important ecologically.

Entomologists Pat Zungoli and Eric Benson are researching ways to control the needle ant. To date, they have found it in more than a half-dozen South Carolina counties, ranging from the coast to the Upstate.

While the needle ant has been in the United States for decades, now it has reached a population level that can prove to be a problem. Control measures and research on the ant's habitat and behavior is necessary to protect the public and to prevent loss of species diversity.

For more information: Pat Zungoli, 864-656-3137, pzngl@clemson.edu.



Photo by Eric Paysen

CLEMSON
EXTENSION
HGIC 1724 1-888-656-9988
<http://hgic.clemson.edu>

Conserving Water in Your Landscape

Water is a precious natural resource that should be conserved in all endeavors concerning landscape management. In urban areas as much as 60% of all water usage goes to maintaining landscapes. Much of this water is lost through evaporation and runoff from landscapes or is simply excessive designed to be.

These water-efficient seven basic principles:

- good water management
- thorough watering
- limiting and turf
- use of a
- effective
- use of a
- proper

By incorporating plants that have developed shallow root systems due to improper watering practices. More information on how to water properly is described in HGIC 1006, *Watering Shrubs & Trees*, and HGIC 1207, *Watering Lawns*.

START WITH Water efficient or planted with can be colorful plants maintain can develop a still preserve a

Begin With A sketch of your shrubs and grass with your site if a structure is or may have drain these spots. On

Watering Lawns
To Water or Not to Water: When it comes to lawn irrigation, you have two choices during long, dry, hot periods in the summer:

- Water the grass to keep it green.
- Don't water. Let it turn brown and go dormant.

Watering keeps the grass green, but increases the need for mowing, encourages weed growth, can cause lawn disease and raises your water bill. If you decide to let your lawn go dormant, warm-season grasses like centipedegrass, bermudagrass, zoysiagrass and St. Augustinegrass will survive and rebound when favorable conditions return. Tall fescue may not fare as well. In some cases, extended drought can severely injure or kill tall fescue. Whatever lawn care option you choose, stick with it. Flip-flopping between the two can weaken your lawn.

How to Identify a Thirsty Lawn: If you choose to irrigate your lawn during drought periods, do so efficiently. Water when the lawn shows signs of "thirst," applying an appropriate amount at the right time of day.

HOME & GARDEN INFORMATION CENTER

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<http://hgic.clemson.edu>

Drought

Hot, dry summer months are some of the most stressful times for plants in the landscape. Without adequate moisture, plants cannot function normally and can become predisposed to other stresses in the environment, such as winter injury or diseases. Particularly susceptible to drought damage are plants that have developed shallow root systems due to improper watering practices. More information on how to water properly is described in HGIC 1006, *Watering Shrubs & Trees*, and HGIC 1207, *Watering Lawns*.

Watering Your Lawn: Once you have determined that your lawn is dry, apply about an inch of water. This amount should moisten the soil to a depth of 4 to 6 inches. If rainfall is a problem, apply half and let it soak in before applying more water. Early morning is the best time to water. Irrigation timers should be set to water the lawn between 4 and 6 a.m.

Water your lawn only as often as necessary. Applying a little bit of water daily can be harmful, since it can encourage shallow roots. This makes the grass less drought-tolerant. Stretch the interval between each watering to encourage development of deep, extensive roots.

Watering Trees and Shrubs
Signs of Drought Stress: Drought symptoms can be very confusing and can vary with different types of plants. Woody plants under drought stress can have many symptoms including, yellowing, wilting, leaves that develop early fall color and burning or scorching on the edges of leaves. Plants may drop some or all of their leaves and appear to be dead.

Drought information is online

By Diane Palmer

Most of South Carolina has experienced drought conditions during eight of the last 10 years due to inadequate rainfall. Drought conditions range from abnormally dry to exceptionally dry across the state. Without sufficient moisture, plants cannot grow properly and become susceptible to other stresses in the environment.

Clemson University's Home and Garden Information Center has placed drought information leaflets online to help care for plants during these dry periods.

The leaflets include: Watering Shrubs and Trees, Watering Lawns, Watering the Vegetable Garden, Mulch, Plants for Dry Areas, Conserving Water in Your Landscape, and Drought. The free information is at: <http://hgic.clemson.edu/> at the bottom left of the screen: Drought Update.

For more information: Joey Williamson, 864-656-9999; jwwill@clemson.edu.

Not your average water feature

By Peter Hull

Scientists at the Baruch Institute of Coastal Ecology and Forest Science in Georgetown want to protect future developments from the risks of flooding.

Biosystems engineers Anand Jayakaran and Dan Hitchcock are documenting what pre-development hydrologic conditions exist in coastal watersheds – in this case, the historic Bannockburn Plantation between U.S. Hwy. 17 and the Atlantic Ocean.

Their mission is simple: Control stormwater runoff as if the bulldozers had never moved in. To that end, they have built and installed three 10-foot long by 2-feet wide water flumes that will provide the telltale data.

By knowing the exact dimensions of the flume they can determine how much water passes through it, and what bacteria and sediment are in the water. If the site one day becomes homes or businesses, their research into water flow could prevent those structures from flooding.

For more information: Anand Jayakaran, 843-546-1013, ext. 223 or ajayaka@clemson.edu, Dan Hitchcock, 843-546-1013, ext. 236, or dhitchc@clemson.edu, or www.clemson.edu/baruch/.



Photo by Peter Hull

Local communities join to tackle stormwater

By Peter Hull

Communities across the Charleston region have joined with Clemson University's Carolina Clear program to tackle stormwater issues and protect area water quality.

Representatives from 11 local governments signed a joint resolution to adopt a regional stormwater runoff education strategy through the Ashley Cooper Stormwater Education Consortium.

The consortium, a partnership between communities and educators from universities, state agencies and nonprofits, is the third and largest regional collaboration to date in the Carolina Clear program. It follows similar efforts along the Grand Strand and in the Midlands.

Carolina Clear's goal is to minimize polluted stormwater runoff by educating the general public, youth, builders, developers, homeowners and government officials about how they can keep water in the state's streams, rivers and basins as clean as possible.

For more information: David Joyner, 843-722-5940, ext. 125; djoyner@clemson.edu or <http://carolinaclear.clemson.edu/>



Photo by Peter Hull

Hunting generates income

By Peter Kent

Rural residents are often land-rich and cash-strapped but Clemson forestry and natural resources scientists have identified a potential income source.

Hunting on private lands is a major recreational activity in rural areas of the state. Researchers David Guynn and Greg Yarrow conducted surveys to measure landowner-hunter arrangements and the economic impact of hunting on local businesses.

Data from the last survey estimates that the total in-county private land hunter expenditures were more than \$6 million in Jasper County and more than \$4 million in McCormick County.

This research shows that leasing hunting rights can provide landowners a way to prosper without having to sell increasingly scarce large holdings. In addition, hunting helps communities by supporting businesses in rural counties.

For more information: David Guynn Jr., 864-656-4830, dguynn@clemson.edu.



Photo by Kay Cooksey

New packaging technology keeps food fresher, more appealing

By Peter Kent

Keeping food fresh, appealing and ready-to-eat are top packaging preferences

for consumers. Keeping packaging costs down is the manufacturer's top concern.

Packaging scientist Kay Cooksey specializes in new packaging products and processes that can benefit both the consumer and the producer. Today, the emphasis is on "active" packaging, which gives foods longer shelf life and added value.

Active packaging materials do more than protect, store and transport foods. They interact with the food, adding to the shelf life and improving the product. Traditional shelf life-extending ingredients and processes can reduce nutrients and add unwanted tastes and odors or change the texture or appearance of the food.

"Using different types of plastic films and including 'sachets' – those little packets you see in fresh food – protect food from mold and bacteria," Cooksey said. "The goal is keep food fresh longer and to find new ways to reduce packaging costs."

For more information: Kay Cooksey, 864-656-4613, kcookse@clemson.edu.

Spices do more than flavor foods – they prevent spoiling

By Peter Kent

Understanding the complex interaction between foods and the active bio-compounds in spices offers new ways to make foods safer and more nutritious. Many spices are being found to have health benefits, helping people to deal with diabetes and other disorders.

Clemson food scientist Aubrey Coffee focuses on "Culinology®" – the combination of culinary arts and food science. She examines the role spices play not only in flavoring foods but also preserving them. One of her projects involves gingerbread and ginger.

"During the Middle Ages, gingerbread was a term used for a spicy bread that usually did not contain ginger, but research has found that ginger has preservative qualities in addition to the flavor it adds," said Coffee.

Her research is investigating the functionality of ingredients in a gingerbread recipe from 1430: cinnamon, ginger, black pepper and honey. Shelf-life data will be analyzed at the end of the 20-week study.

For more information: Aubrey Coffee, 864-656-1201, acoffee@clemson.edu.



Photo by Peter Kent

Bitter melon may provide treatment for diabetes

By Peter Kent



Photo by Peter Kent

Diabetes ranks seventh among the causes of death in South Carolina. And the numbers are bound to rise until the state can stem the tide of obesity, which can spur the onset of the disease.

Typically, diet and drugs such as insulin are used to control diabetes, but scientists are exploring alternatives. One promising research area is botanical medicines – plants that contain bioactive compounds that can prevent and cure diseases.

Clemson genetics scientist Chittaranjan Kole is studying bitter melon, which is used as a health food and medicine in countries ranging from China to Brazil.

At least 22 medicinally active chemicals have been identified in bitter melon, and may be useful in treating diabetes as well as other diseases such as cancer, ulcer, hepatitis, measles, HIV and immune disorders.

The plant also may provide a new cash crop for South Carolina farmers who can supply both consumers and the health-food industry.

For more information: Chittaranjan Kole, 864-656-3060, ckole@clemson.edu.

Barn painting benefits 4-H programs

By Diane Palmer

Renowned artist Jim Harrison displays his “4-H Barn” painting that he recently created to celebrate SC 4-H’s 100-year anniversary. The artist is described as one of the nation’s foremost chroniclers of earlier twentieth century rural life.

“Jim Harrison’s art of rural barns represents the heart of American culture capturing a sense of the past. His new print reflects the pride of 4-H members and alumni who belong to the world’s largest youth development program,” said Shannon Herndon, Clemson Extension 4-H agent.

“4-H has a nostalgic ring to it that certainly goes back to my childhood remembrances,” said Harrison. “So, I was delighted when asked to do something that includes the 4-H symbol.”

A 12x16-inch print can be purchased for \$60 by calling 864-656-3848 or e-mailing sc4h@clemson.edu. Proceeds will benefit 4-H programs and scholarships.

For more information:
Susie Groomes, 864-656-3848,
sc4h@clemson.edu.



Photo by Harrison Studio

New partnership serves York County boys

By Pam Bryant

The Boys Home of York County has not gone away, just in a new direction. Established in 1970 by the Rock Hill Area Jaycees and the York County Family Court as an alternative to incarceration for teenage boys, the residential facility was forced to close in 2004 due to budget shortfalls.

In September a new partnership was announced with Clemson’s Youth Learning Institute (YLI) to continue service to at-risk, male youth.

Boys Home Board President Doug Gay says the partnership “is an incredible opportunity to build on our track record of service to young men. We believe summer residential experiences with Clemson’s Youth Learning Institute can make a profound difference in their lives.”

Proceeds from the sale of the former Boys Home property will fund the first partnership initiative – scholarships for York County boys to attend YLI’s Adventure Summer Camp at Pinnacle Falls. Additional partnerships will be sought for scholarship referrals and funding for future initiatives.

For more information: Greg Linke, 864-353-4313,
glinke@clemson.edu.

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Photo by Youth Learning Institute

Teens prepare for service to schools and communities

By Pam Bryant

This summer, 84 students from across the state dedicated two weeks to building character and preparing themselves for service to their schools and communities this academic year.

Teen LEAD (Leaders Evolving And Developing), a partnership between the S.C. Department of Education and Clemson’s Youth Learning Institute, brings 10th graders and faculty mentors to the Institute in Pickens to strengthen character through servant leadership.

“We want these students to reflect high moral standards and values, strong work ethics and a sense of their role in contributing to the larger community,” said Joan Dickinson, Teen LEAD program coordinator. “We want them to learn good decision-making skills, so that they complete their education and transition successfully to the next stage of life.”

One project this year honored the men and women in military service. Students painted American flags and personal messages of thanks to S.C. National Guard troops headed to Iraq. Most importantly, they discovered what they can accomplish when faced with new challenges and opportunities to grow.

The four-year program is funded by a U.S. Department of Education grant.

For more information: Joan Dickinson, 803-734-4807,
jdickins@ed.sc.gov

Youth Development and Families



4-H2O Pontoon Classroom teaches value of clean water

By Diane Palmer

Pollution of our lakes, rivers and streams continues to be a concern in our state. Education is the key to teach children the consequences of not keeping our waters clean.

They are beginning to learn the value of clean water in a hands-on science inquiry program called the 4-H2O Pontoon Classroom. The 4-H program builds practical knowledge of local water resources and teaches field, analytical and critical thinking skills.

Twenty children, ages 10-12, attended a week-long camp at Lake Murray in Lexington County this summer. The camp combined outdoor adventures in and on the water with classroom activities, sports, homework and lessons on the history of Lake Murray and on protecting and preserving our environment.

"I learned about pollution and water runoff," said camper Colin Anderson. "I never knew how bad it is. Trees help stop the problem."

For more information: Paulette Gay, 803-359-8515, pgay@clemson.edu.



Photos by 4-H

Camp Long Field Day rewards hard work

By Chris Copeland

Nearly 300 participants – staff and students – competed in Camp Long Field Day this fall at Clemson's W.W. Long Leadership Center in Aiken.

"These kids work hard in very disciplined programs, and we want to let them have some fun in this event," said Cody Greene, Camp Long director. The programs are conducted through two partnerships with Clemson's Youth Learning Institute.

The Youth Challenge Academy, through the S.C. National Guard, helps at-risk youth gain the values, skills, education and self-discipline necessary to succeed as adults. The Youth Development Center, through the S.C. Department of Juvenile Justice, helps low-risk, nonviolent offenders succeed through behavior modification, innovative learning programs, personal development and career planning.

Opening ceremonies were led by Greene with National Guard Captain Lee Anderson and Sergeant-Major Michael Parker. Musical entertainment was by the Youth Challenge Academy choir with a Youth Development Center student singing the national anthem. The all-day celebration included softball, flag football, basketball, volleyball, fishing and horse-shoes, with a mid-day cookout.

For more information: Cody Greene, 803-292-7590, cgreene@clemson.edu.



Photo by Carleton Giles

Research and public service honored

By Peter Kent

Research to develop a disease-resistant peach tree rootstock has improved the quality of fruit production and helped make Clemson an internationally recognized leader in peach tree research.

Peach tree scientist Gregory L. Reighard developed and trademarked the Guardian® rootstock that has expanded peach production in the state and around the world. To recognize his effort, Reighard was selected for Clemson's highest agricultural honor: the Godley-Snell Award for Excellence in Agricultural Research.

For more information: Greg Reighard, 864-656-4962, grghrd@clemson.edu.



Dedication to protecting the public from food-borne illnesses put South Carolina among the leaders in the nation for food safety and earned the 2008 American Veterinary Medical Association Public Service Award for Clemson veterinarian Daniel Lafontaine.

Lafontaine is director of the S.C. Meat and Poultry Inspection unit, the state's USDA representative to ensure that meat and poultry products are safe, wholesome and accurately labeled.

For more information: Dan Lafontaine, 803-788-8747, dlfntn@clemson.edu.



New directors named

By Peter Hull

Nationally recognized environmental educator and restoration ecologist Gene W. Eidson has been named director of the Baruch Institute for Coastal Ecology and Forest Science in Georgetown. He succeeds George Askew who became associate dean/associate director for Agriculture and Natural Resources after serving as Baruch director for 23 years.

Eidson joined Clemson in January 2007 and also serves as director of the Center for Watershed Excellence in Clemson's Restoration Institute. He will combine these responsibilities with his new role to further Clemson's water resources and ecological restoration initiatives, emphasizing the University's role in coastal issues.

For more information: Gene Eidson, 843-546-1013, geidson@clemson.edu or www.clemson.edu/baruch/.



John D. Mueller has been appointed director of the Edisto Research and Education Center in Blackville after serving as interim director of the center for the past year. He succeeds Steve Meadows, who became Extension field operations director.

Mueller joined Clemson in Blackville in 1983 as assistant professor of plant pathology. His primary research areas are cotton and soybean nematology. The Edisto center focuses on production agriculture, including beef cattle, cotton, soybeans, small grains, vegetables, melons and precision agriculture to reduce chemical and water usage.

For more information: John D. Mueller, 803-284-3343, jmlr@clemson.edu or www.clemson.edu/edisto/.



New facility delivers latest imaging technology

By Peter Kent

Crucial data obtained from a study of how to form a protective oyster shell on metals led to development of a new microscope by Nikon – and to a state-of-the-art microscopy facility being located at Clemson.

The research by marine biologist Andy Mount was selected in part because his research combines biology and materials science. As a result, a collection of the latest Nikon microscopes and digital cameras have been installed at Clemson for biological and materials research.

It is the first facility to include such an advanced array of imaging technology. The equipment can deliver three-dimensional cellular information at faster rates and higher resolution than previously available and includes an incubator chamber for long-term time-lapse live cell digital imaging.

"This equipment gives Clemson scientists access to cutting-edge imaging technologies," said Hap Wheeler, chair of the Biological Sciences department. "We intend to continue our research and development relationship with Nikon so that new technologies can be developed here."

For more information: Andy Mount, 864-656-3597, mount@clemson.edu.

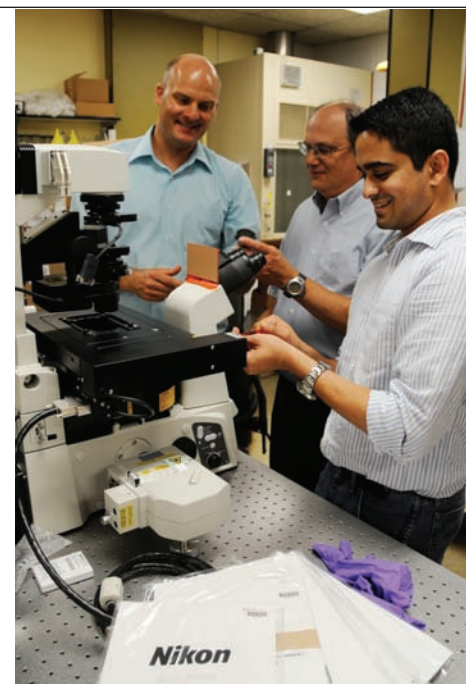


Photo by Nikon, Inc.



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Olympic horseman teaches jumping clinic

By Diane Palmer

Former Olympian George Morris, one of America's premier hunter-jumper and equitation trainers, will teach a three-day clinic Dec. 27-29 at Clemson University's T. Ed Garrison Livestock Arena.

Morris has helped a long list of successful riders, trainers and horses compete at the highest level by training them how to improve jumping techniques and rider position. This program is affiliated with the U.S. Hunter Jumper Association.

Instruction will cover stirrup length, crops and spurs, and hand position. The clinic runs from 9 a.m. to 5 p.m. each day and is limited to eight participants in each of three sections: 3 feet, 3 feet-6 inches and jumpers. Registration is \$750; stalls and RV parking are available.

For more information: Charles Williams, 864-646-2718, cwillms@clemson.edu, Sherry Pace, 803-713-3953, camdenequestrian@aol.com, or www.clemson.edu/garrison/.

Photo by Tanya Bruce Thomas

